



Edison Electric  
INSTITUTE



TEXAS RE

# Supply Chain Series

**David Batz**  
**Edison Electric Institute**

**June 27, 2024**



# Antitrust Admonition

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**Notice of this meeting was posted on the Texas RE website and this meeting is being held in public. Participants should keep in mind that the listening audience may include members of the press, representatives from various governmental authorities, and industry stakeholders.**



# Upcoming Texas RE Events



July 9, 2024

Cybersecurity Threats



July 18, 2024

Zero Trust Architecture



July 30, 2024

Inverter-Based Resources





# **Cyber and Physical Security Workshop**

## **August 28, 2024**

# Upcoming ERO Enterprise Events



**May - July, 2024**

GADS Wind & Solar  
Template and Application  
Training



**July 16-18, 2024**

Physical Security Workshop



**August 13-15, 2024**

Power Systems Security  
Conference





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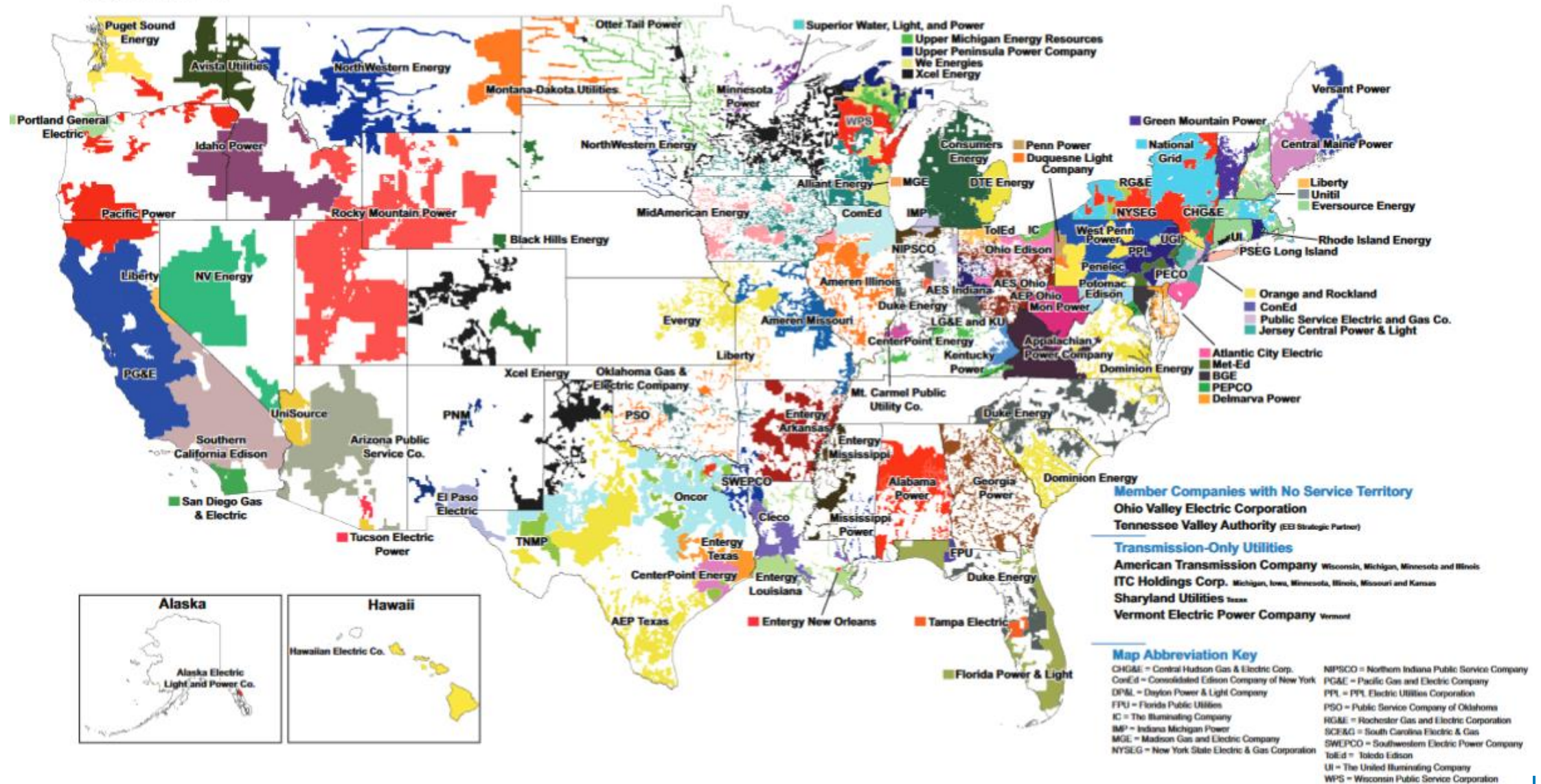




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Edison Electric Institute  
@DavBatz



# EEI U.S. Member Company Service Territories



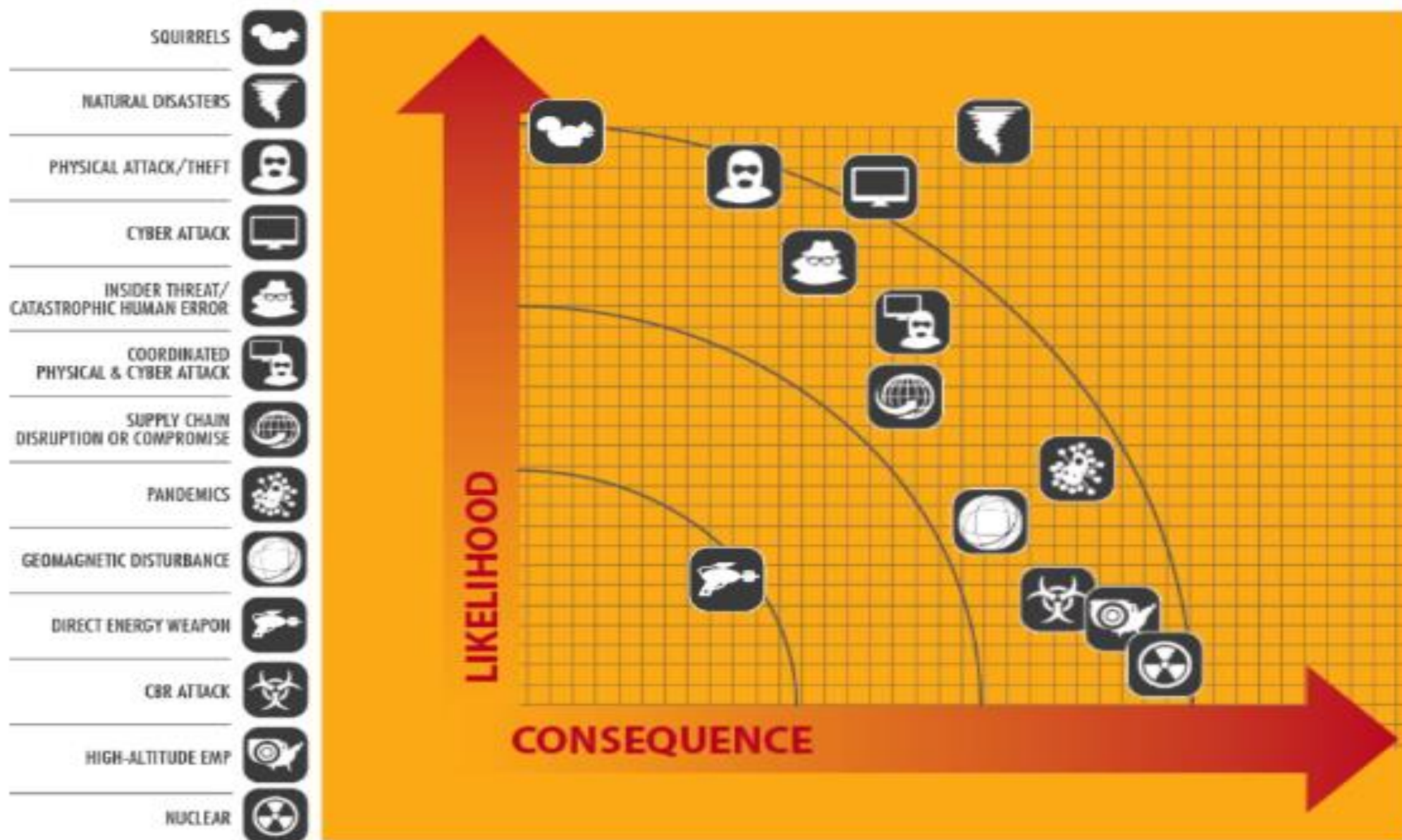


# Our Agenda

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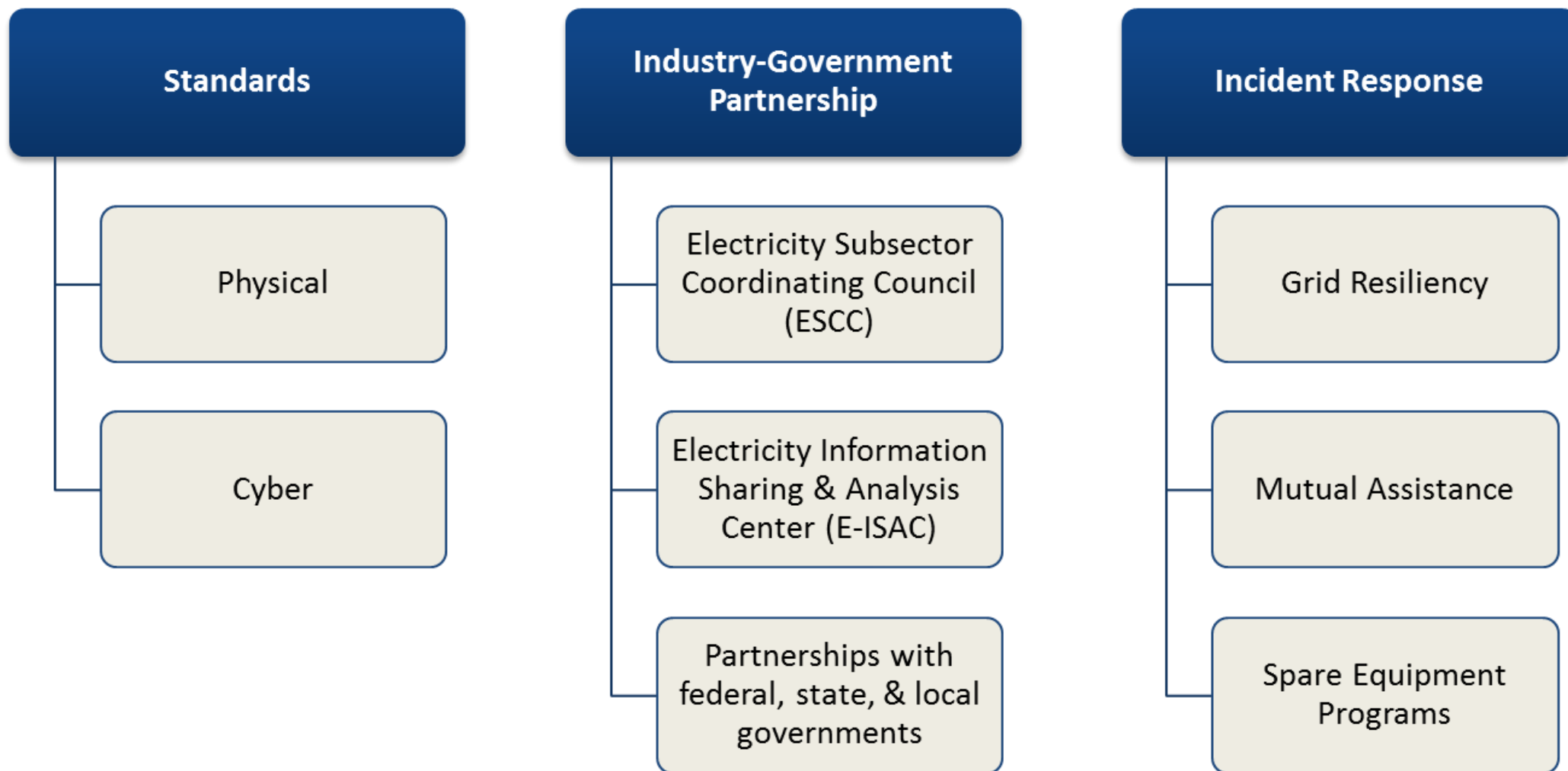
1. Electric Sector Approach to Risk Management
2. The Bad News
3. The Good News
4. Your Questions

# The Threat Landscape



CBR – Chemical, Biological, Radiological  
EMP – Electro-magnetic Pulse

# Approach to Grid Security





# The Bad News

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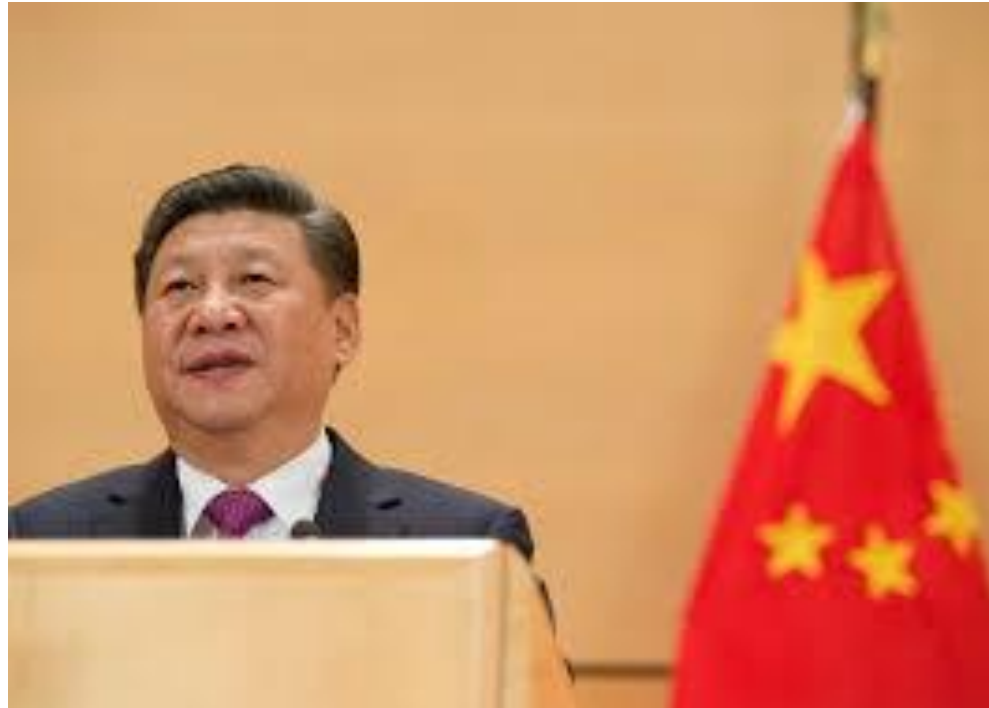
# China

Current Leadership/ Policy ≠ People



# China – Planning Horizons

- Published Five Year Plans
- President Xi Vision for a 100 Year plan



[https://en.wikipedia.org/wiki/Five-year\\_plans\\_of\\_China](https://en.wikipedia.org/wiki/Five-year_plans_of_China)

<https://www.cnbc.com/2021/07/02/ccp-100-years-xi-seizes-the-chance-to-lead-china-in-the-path-to-power.html>

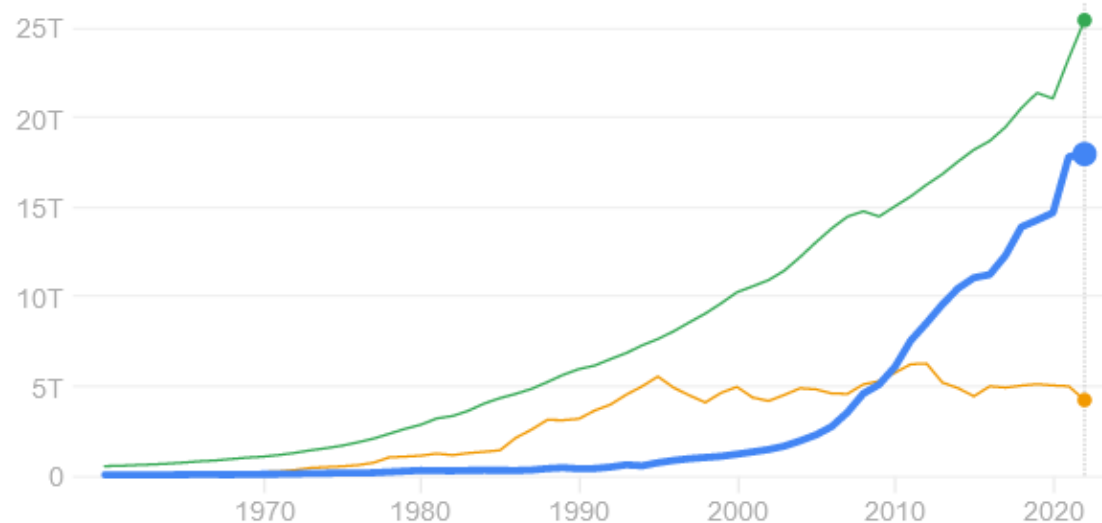


# China – Planning Horizons

- Stunning Economic Growth since the 1980s
- The Hundred-Year Marathon – Michael Pilsbury

China / Gross domestic product

17.96 trillion USD (2022)



- United States  
25.44 trillion  
USD (2022)
- China  
17.96 trillion  
USD (2022)
- Japan  
4.232 trillion  
USD (2022)



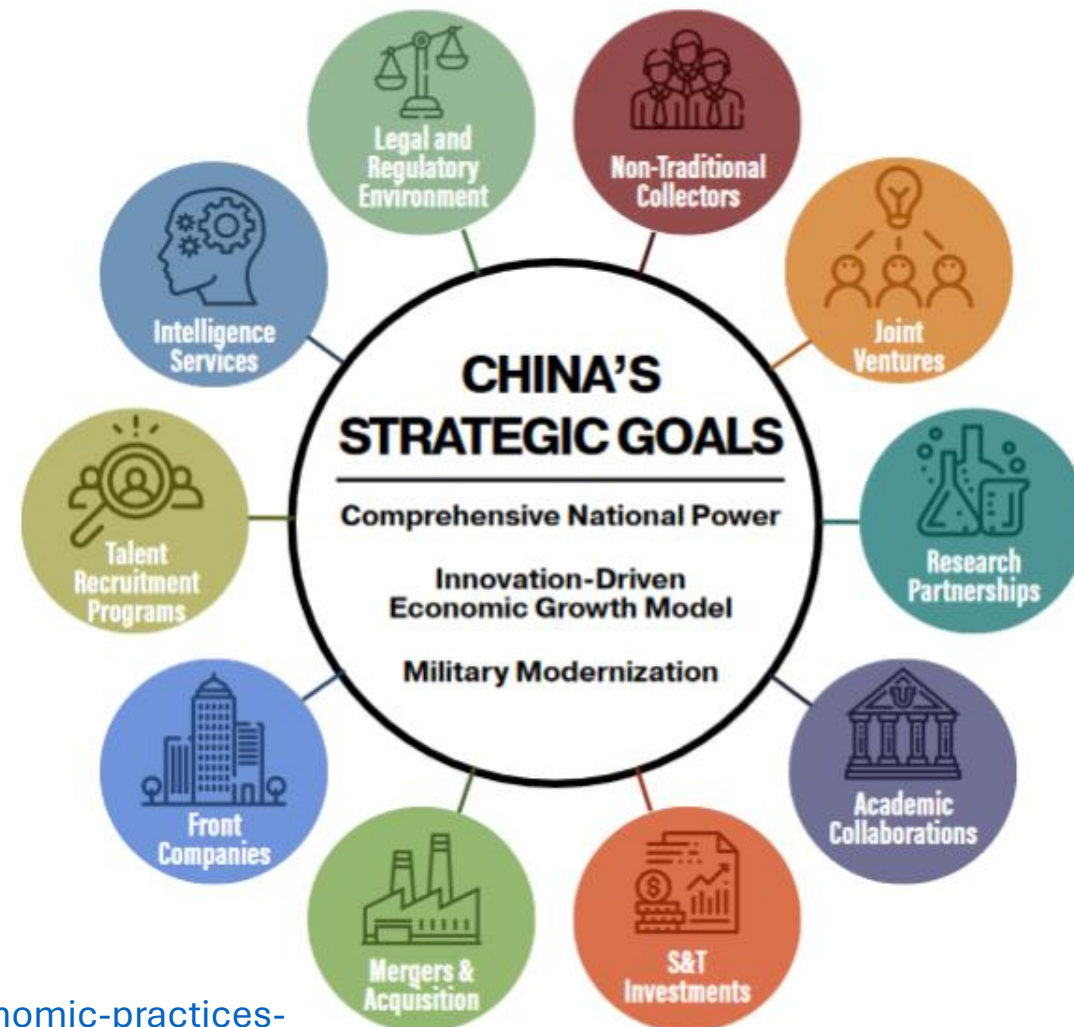
<https://www.forbes.com/sites/johnmauldin/2019/11/12/chinas-grand-plan-to-take-over-the-world>

# Intellectual Property Theft / Espionage

The annual cost to the U.S.  
economy of counterfeit goods, pirated  
software, and theft of trade secrets is  
**\$225–\$600 BILLION**



<https://carnegieendowment.org/2022/04/25/countering-unfair-chinese-economic-practices-and-intellectual-property-theft-pub-86925>  
<https://www.fbi.gov/file-repository/china-exec-summary-risk-to-corporate-america-2019.pdf>



# Dumping



## Dumping

Occurs when goods are exported at a price less than their normal value, generally meaning they are exported for less than they are sold in the domestic market or third-country markets, or at less than production cost.

FINDINGS OF THE INVESTIGATION INTO  
CHINA'S ACTS, POLICIES, AND PRACTICES  
RELATED TO TECHNOLOGY TRANSFER,  
INTELLECTUAL PROPERTY, AND INNOVATION  
UNDER SECTION 301 OF THE TRADE ACT OF 1974



According to SolarWorld, this has driven nearly 30 U.S. manufacturing firms out of business and has left the U.S. solar manufacturing industry on the brink of collapse. SolarWorld adds that the DOJ indictment against Chinese military hackers outlines the scope of the hack, along with the degree of involvement of Chinese SOEs, and the orchestrated timing of the hack with the dumping of solar panels into the U.S. market.





# Forced Labor

## Forced Labor in Xinjiang



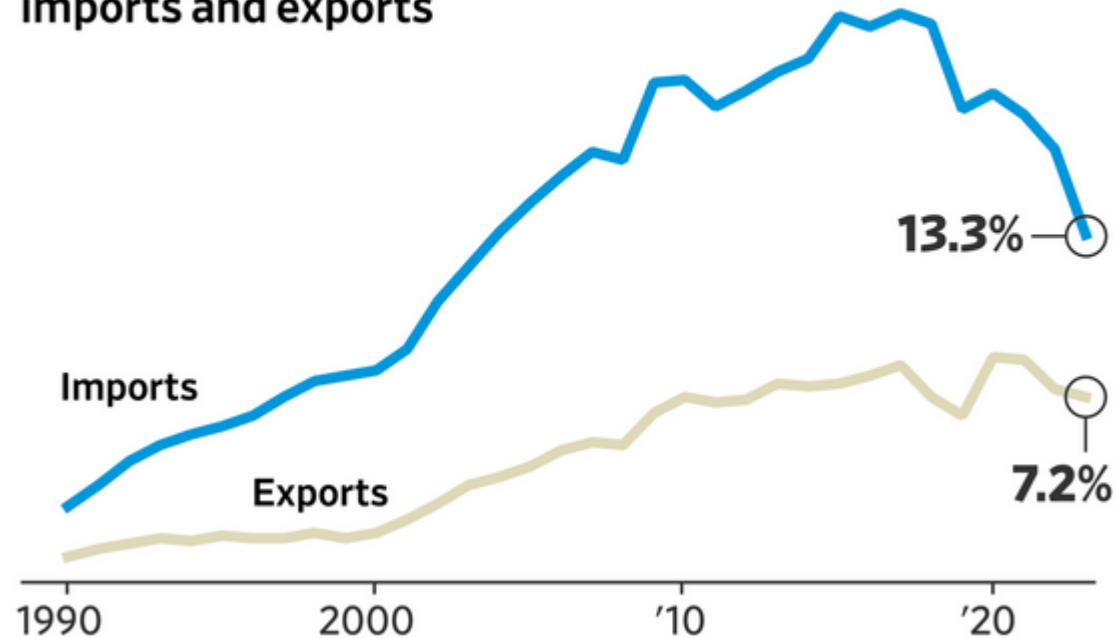
<https://www.dol.gov/agencies/ilab/against-their-will-the-situation-in-xinjiang>  
<https://www.hrw.org/report/2024/02/01/asleep-wheel/car-companies-complicity-forced-labor-china>

# Belt and Road Initiative



# Manufacturing Flight to China

China's share of U.S. goods imports and exports



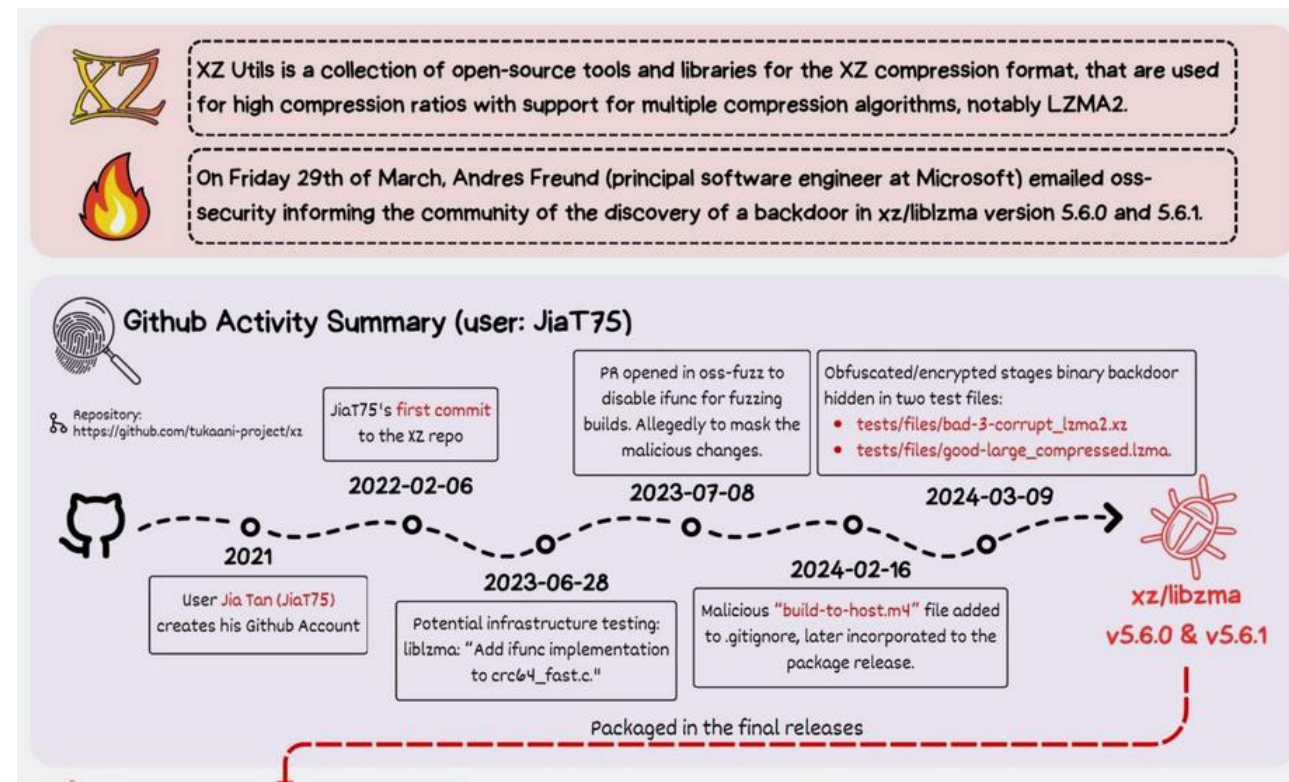


# Third Party Risk

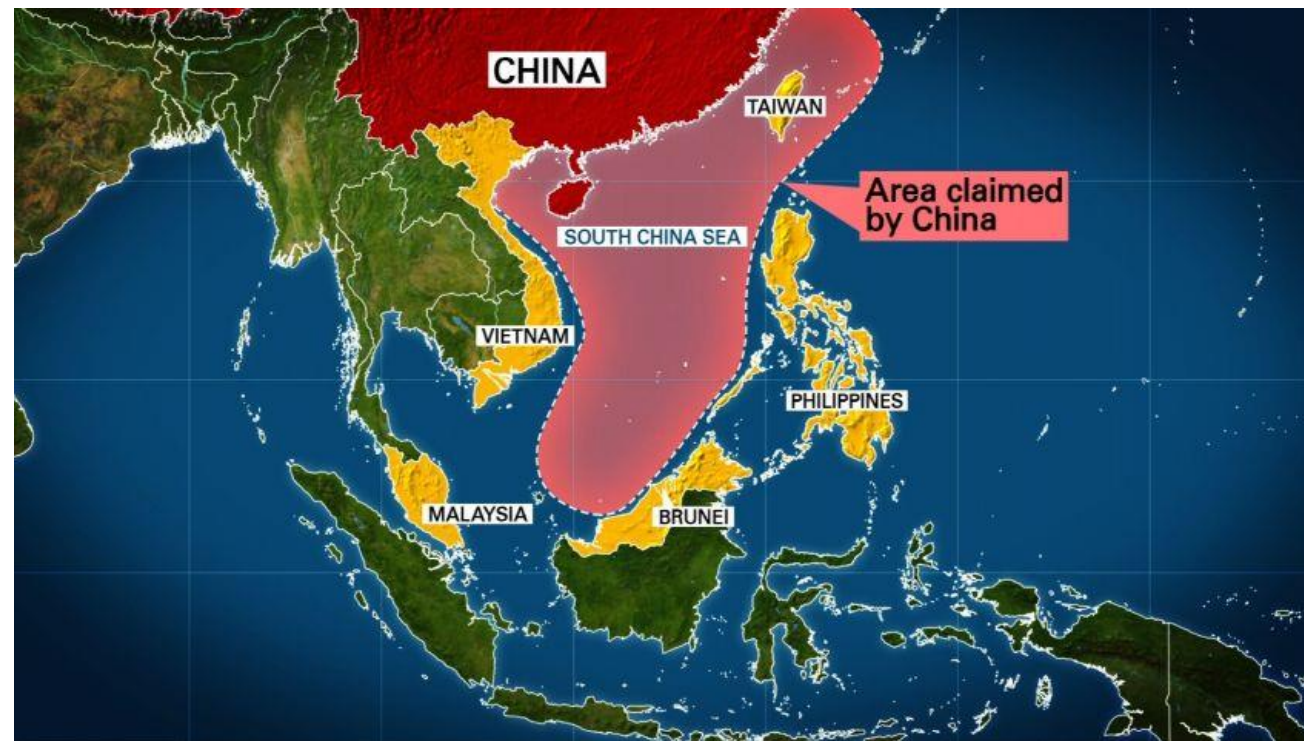


<https://www.gao.gov/blog/solarwinds-cyberattack-demands-significant-federal-and-private-sector-response-infographic>

<https://arstechnica.com/security/2024/04/what-we-know-about-the-xz-utils-backdoor-that-almost-infected-the-world/>



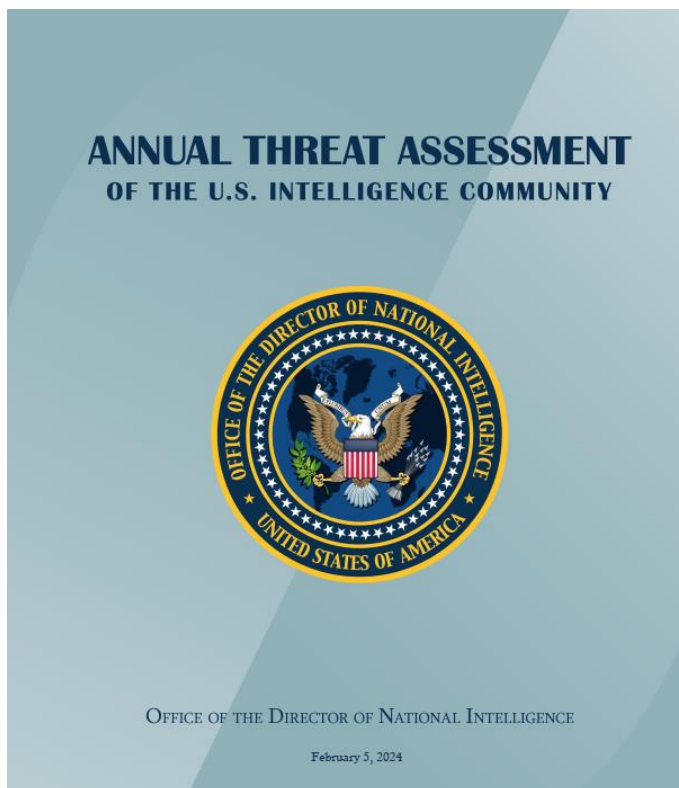
# Volt Typhoon



<https://www.cisa.gov/news-events/cybersecurity-advisories/aa24-038a>

<https://www.theguardian.com/technology/2024/feb/13/volt-typhoon-what-is-it-how-does-it-work-chinese-cyber-operation-china-hackers-explainer>

# National Threat Assessment



*...China remains the most active and persistent cyber threat to U.S. Government, private-sector, and critical infrastructure networks. Beijing's cyber espionage pursuits and its industry's export of surveillance, information, and communications technologies increase the threats of aggressive cyber operations against the United States and the suppression of the free flow of information in cyberspace....*





# Scale of the Threat

Part of the problem facing US officials is a sheer numbers game. Wray reiterated that he believes that China's cyber operatives outnumber all FBI agents by **at least 50 to 1**.



<https://www.cnn.com/2024/01/31/politics/china-hacking-infrasctrure-fbi-director-christopher-wray/index.html>



# The Good News

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Created by ImageFX

# Silver lining from pandemic – Reshoring

The COVID-19 pandemic exposed the vulnerabilities of extensive and intricate international supply chains. By reshoring, manufacturers can shorten their supply chains, enhance their adaptability to disruptions, and improve their ability to respond swiftly to shifts in demand or supply. This agility proves invaluable in uncertain times and is a strong motivator for reshoring.



<https://www.cnbc.com/2023/06/01/reshoring-more-domestic-manufacturing-due-to-supply-chain-disruption.html>

<https://guidetechnologies.com/the-resurgence-of-american-manufacturing-a-look-at-the-reshoring-phenomenon-and-its-impact-on-technology-adoption/>

# Other Advantages of Reshoring / Near Shoring

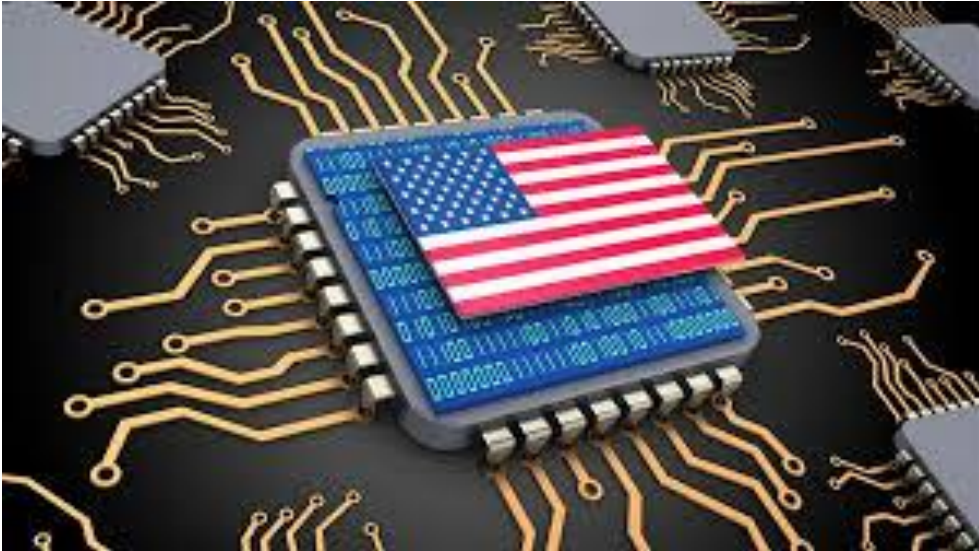
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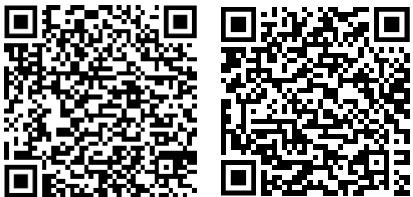
[https://en.wikipedia.org/wiki/2021\\_Suez\\_Canal\\_obstruction](https://en.wikipedia.org/wiki/2021_Suez_Canal_obstruction)



# CHIPS Act



The CHIPS Act encourages more individuals to explore and pursue manufacturing careers through apprenticeships and STEM education. Part of the act will focus on workforce training opportunities. Millions of dollars will go towards workforce development to ensure there's an adequate workforce who's qualified to support semiconductor chip manufacturing. In addition, the \$13 billion that's going towards STEM education includes scholarships and fellowship which will strengthen the workforce to support the industry.



<https://carnegieendowment.org/2022/11/22/after-chips-act-limits-of-reshoring-and-next-steps-for-u.s.-semiconductor-policy-pub-88439>

<https://www.njmep.org/blog/the-chips-and-science-act-is-a-huge-boost-for-domestic-manufacturing/>



# Inflation Reduction Act

An REC Silicon ASA solar panel materials plant in Moses Lake, Washington, is preparing to ship its first new batch of polycrystalline silicon in five years, helping to reforge a fundamental missing link in the US photovoltaic supply chain.



<https://recsilicon.com/technology>

<https://www.capitaliq.spglobal.com/web/client#news/article?id=79997777>

# Challenges and Growth in Domestic Transformer Production

The Department of Commerce reported that the U.S. imported more than 80 percent of its total large power transformers in 2020.



<https://www.powersystems.technology/community-hub/in-focus/north-american-transformer-production-is-key-to-reliable-electric-grid-dependence-on-imports-risks-u-s-electrical-power-supply.html>

[https://www.siemens-energy.com/global/en/home/press-releases/siemens\\_energy\\_addresses\\_shortage\\_US\\_powertransformers\\_invests\\_new\\_factory.html](https://www.siemens-energy.com/global/en/home/press-releases/siemens_energy_addresses_shortage_US_powertransformers_invests_new_factory.html)

# GAO 2023 Report on Transformers



Nearly all stakeholders we spoke with identified supply chain constraints as the most pressing challenge for utilities attempting to ensure adequate reserves of transformers. Stakeholders reported that these constraints apply to and affect not only the manufacturing of transformers but the entire electric utility industry and that the COVID-19 pandemic exacerbated some of the issues



# GAO 2023 Report on Transformers

Program	Description	Triggering event	Membership
<b>Spare Transformer Equipment Program (STEP)</b>	Edison Electric Institute's (EEI) STEP requires participating utilities to maintain (and sometimes acquire) a specific number of transformers to share with other utilities in case of a critical substation failure.	Although participation in STEP is voluntary, sharing transformers is mandatory for participants and is triggered by an act of terrorism and presidential declaration of emergency or grid security emergency.	Transmission-owning entities. As of March 2023, there were 57 asset owners participating, according to EEI.
<b>SpareConnect</b>	EEI's SpareConnect is a voluntary online networking tool that connects transmission asset owners and operators at participating utilities. Participants who are interested in providing additional information or sharing equipment work directly with each other on the specific terms and conditions of any potential equipment sale or other transaction.	Voluntary sharing during an emergency or other nonroutine failure	Transmission and generation-owning entities. As of March 2023, there were 120 asset owners participating, according to EEI.
<b>Regional Equipment Sharing for Transmission Outage Restoration (RESTORE)</b>	According to the North American Transmission Forum (NATF), the RESTORE program is designed to enhance the resiliency and reliability of the grid by identifying sources and facilitating replacement of equipment (including transformers) following disastrous events. This voluntary program is available to NATF members for an additional cost. RESTORE is intended to be supplemental to other industry programs.	Catastrophic event or physical attack within service territory resulting in loss of load or affecting grid stability	Transmission-owning entities. As of October 2022, RESTORE included 18 total companies (40 individual utilities), according to NATF.
<b>Grid Assurance</b>	Subscription-based initiative that owns and maintains equipment at secure, strategically located warehouses and provides preplanned logistics to expedite equipment transportation to affected sites. Grid Assurance charges a cost-based subscription fee to facilitate subscribers' ability to recover expenses.	Self-declared qualifying events like physical attacks, electromagnetic pulses, solar storms, cyberattacks, earthquakes, and severe weather events	Transmission-owning entities. According to Grid Assurance, 31 companies covering parts of 28 states subscribed as of March 2023.

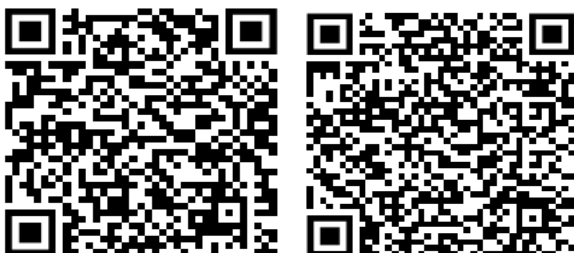




# Distribution Transformer Efficiency Standards

December 28, 2022 - Initial Proposal

April 4, 2024 – Final Rule



<https://www.energy.gov/articles/doe-proposes-new-efficiency-standards-distribution-transformers>  
<https://www.powermag.com/doe-eases-requirements-in-final-transformer-efficiency-standards-amid-supply-chain-strain/>



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# Questions?

